


Situation of physical activity in the prevention of non-communicable diseases in Bhutan: challenges and the way forward

Monu Tamang ¹, Benu Prasad Dahal,² Thinley Dorji,³ Saran Tenzin Tamang,⁴ Don Eliseo III Lucero-Prisno^{5,6}

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¹Department of Physiotherapy, Central Regional Referral Hospital, Gelephu, Bhutan

²School of Business, Griffith University, Brisbane, Queensland, Australia

³Department of Internal Medicine, Central Regional Referral Hospital, Gelephu, Bhutan

⁴Department of Emergency Medicine, Central Regional Referral Hospital, Gelephu, Bhutan

⁵Department of Global Health and Development, London School of Hygiene and Tropical Medicine, London, UK

⁶Faculty of Management and Development Studies, University of the Philippines Open University, Laguna, Philippines

Correspondence to

Monu Tamang;
monutamang.pt@gmail.com

ABSTRACT

Bhutan is a lower-income–middle-income country in the Himalayas, between India and China. Non-communicable diseases (NCDs) are the leading cause of death and premature mortality in Bhutan, accounting for 69% and 71% of all deaths in 2014 and 2019, respectively. Although the World Health Organisation (WHO) identified physical activity as a key strategy to reduce the burden of NCDs, with rapid urbanisation, motorised transportation, and rural–urban migration, people are adapting to sedentary lifestyles, inflating the incidence of NCDs in the country. The increasing incidence of NCDs exerts a burden on the human and financial resource constraints in the health system in Bhutan.

In this view point, we report evidence-based benefits of physical activity for health promotion, primary prevention of NCDs and health benefits for individuals living with NCDs. We also briefly assess the situation of physical activity in Bhutan. Then, shortcomings of existing NCDs prevention programmes are discussed along with opportunities and ways forward to effectively implementing physical activity to harness the benefits of physical activities.

INTRODUCTION

Non-communicable diseases (NCDs) are the leading cause of death and premature mortality in Bhutan, accounting for 69% and 71% of all deaths in 2014 and 2019, respectively.¹ Bhutan has the highest age-standardised death rates for NCD per 100 000 population² among the World Health Organisation (WHO) Southeast Asia Region member countries. With the prevalence of NCDs and their associated risk factors rising, Bhutan faces a triple burden of NCDs, infectious diseases, and re-emerging diseases. Targeting the risk factors is a major strategy for preventing NCDs in Bhutan.³ WHO's *Global Action Plan for Prevention and Control of NCDs 2013–2020* identified physical activity as a key strategy to reduce the burden of NCDs.⁴ However, urbanisation, motorised

KEY MESSAGES

WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ Non-communicable diseases (NCDs) are the leading cause of death and premature deaths in Bhutan, accounting for 69% and 71% of all deaths in 2014 and 2019, respectively.
- ⇒ The benefits of physical activity in health promotion, prevention of NCDs, and health benefits of physical activity in people living with NCDs are well documented. However, many Bhutanese are adopting sedentary lifestyles due to urbanisation, motorised transportation, and rural–urban migration.

WHAT THIS STUDY ADDS

- ⇒ Physical activity guidelines in Bhutan need urgent revision to include current evidence-based practices and strong action plans.
- ⇒ Physical activity promotion must be included in school and university curricula and advocate the benefits of physical activity in social events.
- ⇒ Policies must be designed and implemented to promote physical activity in workplaces and create a conducive environment in urban centres.

transportation, and the migration of individuals from the agricultural to manufacturing and service sectors of the economy expose Bhutanese to a higher risk of sedentary lives, leading to an increase in NCDs.⁵ This viewpoint describes the situation of physical activity in Bhutan and its role in preventing NCDs in the country.

Burden of NCDs in Bhutan

The WHO Stepwise Approach to Surveillance (STEPS) 2019 survey identified tobacco use, harmful consumption of alcohol, physical inactivity, and unhealthy diet as the major factors driving the rise of NCDs in Bhutan.³ According to the survey, 84.4% of respondents reported not consuming recommended fruits and vegetables, 33.5% were overweight,

28.0% had raised blood pressure, and 1.9% had raised blood sugar.

NCDs have devastating health consequences for individuals and burden the country's health system.¹ The ex-country referral for the treatment of NCDs is increasing and currently accounts for 5% of the health expenditure.⁶ Conversely, Bhutan's free healthcare system has critical fiscal and human resource constraints with only 5.6 doctors per 10000 population.¹ Therefore, any increase in the prevalence of NCDs would strain the resources and compromise the quality of care.

Physical activity in the prevention of NCDs

Health promotion and primary prevention

The *WHO Guidelines on Physical Activity and Sedentary Behaviour 2020* records wide-ranging physical and mental health benefits of physical activity in different age groups.⁷ In adults, physical activity improves all-cause mortality, cardiovascular disease mortality, incident hypertension, incident site-specific cancers, incident type 2 diabetes, mental health (reduced symptoms of anxiety and depression), cognitive health, sleep, and reduced measures of adiposity. In addition to the aforementioned benefits, in older adults physical activity prevents falls and falls-related injuries, slows the decline in bone health, and improves functional ability. Additionally, regular physical activity substantially increases life expectancy.⁸

Secondary prevention

The *WHO Guidelines on Physical Activity and Sedentary Behaviour 2020*⁷ underpins the benefits of physical activity to people with type 2 diabetes mellitus, cancer, and hypertension. There is evidence that physical activity is associated with reduced risk of cardiovascular disease-related mortality and decreased levels of haemoglobin A1c, blood pressure, body mass index, and lipids in adults with diabetes mellitus. Physical activity lowers the risk of all-cause mortality, cancer-specific mortality, and risk of cancer recurrence among patients with cancer. Likewise, there is high-certainty evidence that physical activity decreases cardiovascular disease progression and blood pressure and moderate-certainty evidence that physical activity reduces cardiovascular disease mortality among people with hypertension. Physical activity is also reported to improve health outcomes in people with coronary heart disease.

Situation of physical activity in Bhutan

The WHO STEPS survey (2019) in Bhutan reported that work-related activity (69.0%), travelling from and to places (15.5%), and recreational activities (15.4%) were the major constituents of total physical activity in the country. Insufficient physical activity was highest (28.7%) among the individuals in the younger age group (15–17 years), with a higher prevalence among urban residents (11.6%) than their rural counterparts (4.3%).

Table 1 Comparisons of the situation of physical activity among participants interviewed in the 2014 and 2019 STEPS survey in Bhutan^{3 17}

Domains of measure	2014	2019
Average total time spent on physical activity (min)	451.4	337.0
Average time spent on moderate-intensity physical activity (min)	248.9	174.9
Percentage contribution (%) to total physical activity by		
Work-related activity	71.7	70.2
Travel	18.8	15.3
Recreation	9.5	14.5
STEPS, Stepwise Approach to Surveillance.		

For a demographically young country—the median population age is 26.9 years⁹—the high prevalence of inadequate physical activity among the young population is a public health concern. The predominant physical activity in the country is work-related, involving the rural agricultural population. Bhutan, however, is going through rapid urbanisation, and by 2040, only about 23% of the Bhutanese population is projected to live in rural areas.¹⁰ This changing lifestyle is also based on the changing economic activities of the population, particularly the young who move away from manual-based jobs. **Table 1** compares the status of physical activity reported in the STEPS surveys in 2014 and 2019.

Interventions and opportunities

Multisectoral NCD prevention programmes

The government of Bhutan endorsed three strategic policies to address the concerns of NCDs: *National Policy and Strategic Framework on Prevention and Control of NCDs 2009*, the *National Health Policy 2011* and the *Multi-sectoral National Action Plan for the Prevention and Control of NCDs, 2015–2020*. The implementation of the action plan is overseen by a national steering committee for NCD prevention and control established in 2015. The Lifestyle-Related Disease Programme, established in 2008, is the focal programme within the Ministry of Health for all NCD-related activities and is member secretary to the steering committee.³ Since 2014, STEPS surveys have been conducted every 3–5 years as part of national health surveillance systems to assess trends in the prevalence of NCD risk factors.³

STEPS 2019 recommends an urgent need to promote community-based physical activities at the grassroots level.³ Bhutan should harness the advantage of a well-established primary healthcare system to encourage physically active lifestyles. As of 2021, Bhutan has 48 hospitals, 186 primary healthcare centres, three municipality health centres, and 542 outreach clinics.¹ This network of healthcare facilities covers >95% of the population within 3 hours of travel. Physical accessibility is still a major challenge

with people living scattered across mountainous terrains. Along with the health assistants and nurses in primary healthcare centres, local leaders can be crucial in creating awareness about physical activity.

To implement physical activity guidelines in urban areas, to what extent city designs and transportation support these initiatives is a key consideration. The WHO and other bodies recommend that urban planning considers the population's needs in terms of physical activity, which is represented strongly in the concept of a 'healthy city'.^{11 12} Partnerships should be built on win-win tactics that promote physical activity and healthy lifestyles while also reducing transportation congestion, reliance on fossil fuel-based petroleum, and environmental degradation.

Bhutan Physical Activity Guideline 2011

The guideline was developed as part of the National Policy and Strategic Framework on Prevention and Control of Non-communicable Diseases. A multisectoral technical advisory committee developed the Bhutan Physical Activity Guideline 2011 after several consultative workshops and using available evidence, the best practices, and the expert opinion of the team.¹³ The recommended physical activities were based on local activities. The guidelines¹³ highlight the importance of achieving the required level of physical activity and its various health benefits. The recommended level of physical activity is

packaged based on age, health status, pregnant women, children, and persons with disabilities, among others. The guidelines outline implementation strategies and actions. However, evidence of implementation and effectiveness is scarce and we present our assessment of the implementation status in [table 2](#).

We find that the current physical activity advocacy programme is inadequate. For the communication to be effective, the advocacy programmes need to be tailored to suit the content and linguistic needs of the targeted populations. Religious and cultural activities in Bhutan are important social events which attract thousands of people regularly for religious functions such as mask dance festivals. Physical activity promotion strategies should capitalise on such social events. Religious leaders are influential social actors, and their messages resonate well with people; therefore, public health must collaboratively deliver advocacy programmes to make a wide and immediate impact.

The *Global Action Plan on Physical Activity* recommends a 'systems-based' approach for national implementation of physical activity which requires each country to identify strategic combinations of policy responses for implementation over the short term (2–3 years), medium term (3–6 years), and long term (7–12 years).¹⁴ With rapid socioeconomic transformation, the physical activity guidelines should be

Table 2 The implementation status of the the recommended strategies and actions for physical activity promotion in Bhutan, 2022

Strategies	Actions	Implementation status
Advocacy and awareness	<ul style="list-style-type: none"> ▶ Using popular forum to create awareness of the benefit of physical activity. ▶ Instal BMI weighing booths in public places. ▶ Host physical activity-related information on public websites and pages. ▶ Educate people in rural settings on the benefits of the physical activity. 	Unknown*
Promote health workers' policy	<ul style="list-style-type: none"> ▶ Integrate physical activity in workplaces. ▶ Establish fitness centres at the workplaces with shower facilities. ▶ Provide incentives through vouchers and tax exemptions to employees to encourage physical activity. ▶ Integrate physical activity promotion in the annual work plan. ▶ Recognise organisations that have taken healthy initiatives. 	Unknown*
Targeted population approach	<ul style="list-style-type: none"> ▶ Identify rural occupational groups with a high risk of adopting sedentary lifestyles (eg, weavers and housewives) to design targeted intervention. 	Unknown*
Coordinate for implementation	<ul style="list-style-type: none"> ▶ Organise interactive sessions for the parliamentary bodies to deliberate on healthy lifestyles and lobby for policy support. ▶ Involve religious leaders to engage in the promotion of physical activity through discourse on healthy living. 	Unknown*
Enabling physical environment	<ul style="list-style-type: none"> ▶ Integration of good structural and designs standards for the built environment to cater to people of all ages and abilities. ▶ Ensure safe, accessible and attractive pedestrian pathways. 	Unknown*
Evaluation	<ul style="list-style-type: none"> ▶ Assess through community surveys whether the recommended level of physical activity is achieved. ▶ Introduce annual health promotion audits to assess healthy worker policies in both government and non-government organisations. 	Two STEPS survey done Unknown*

*Information on the progress of the action is not publicly available.
STEPS, Stepwise Approach to Surveillance.

based on the changing socioeconomic realities. In Bhutan, the physical activity guideline remains unupdated since its formulation in 2011, thus necessitating an urgent revision for reasons of currency vis-à-vis the social changes and scientific developments.

Ground-level interventions

Outdoor open-air gym equipment has been installed in public areas in all 20 districts and 4 major municipalities in the country to encourage people to engage in physical activities.³ However, according to the WHO 2019 STEPS survey, 57% of respondents had never used open-air gym facilities and just a third of the 19% who used them did so more than once a month.³ Cycling and hiking pathways have also been developed in Thimphu, the capital.

Starting 5 June 2012, coinciding with World Environment Day, every Tuesday was designated as 'pedestrian day', with motor travel prohibited in all core city areas all over the country. People were encouraged to walk from their homes or take public buses from designated public parking areas to their workplaces. However, after a year, the initiative was discontinued due to growing public frustration with the inconvenience caused by the initiative, limited transportation impacting economic activities, and a lack of supporting infrastructure such as dedicated boardwalks.

Promotion of healthy workers policies

As more people migrate from physically demanding agricultural work to the manufacturing and service sectors where the risk of adopting sedentary lifestyles is high, Bhutan should focus on workplace policies that promote healthy lifestyles. Such policies should encourage employees to engage in physical activity at work by providing financial and other benefits. Annual symbolic physical activity events, such as 'active employees' day', benefited Brazil's physical activity implementation programmes.¹⁵ Annual physical activity activities are held in Bhutan periodically. For example, the Royal Civil Service Commission organises an annual marathon and the Bhutan Cancer Society organises a cancer walk. Such activities should be conducted more frequently at organisational, local, and national levels. These events must be used to spread awareness of the importance and advantages of physical activity.

Educational programmes

Given the high rates of physical inactivity among Bhutanese adolescents, schools can provide immense contribution in promoting and implementing physical activity among students. Evidence reveals that school principals' knowledge of physical activity and healthy lifestyles is linked to students' academic performance.¹⁶ Thus, the public health system must offer capacity-building programmes on physical activity promotion to principals and teachers and collaboratively deliver physical activity promotions based on health and academic benefits.

Healthcare professionals are a critical link to promote physical activity in the population. However, these professionals may not always have adequate knowledge to prescribe exercise; thus, they generally resort to the traditional culture of 'prescribing a medicine for each health concern'.¹⁵ This is largely due to a lack of focus on the science of physical activity and its promotion in medical school curricula.¹⁶ Hence, it would be appropriate to include robust content on physical activities in the country's university education.

CONCLUSION

The epidemiology of Bhutan's disease burden has slowly shifted from communicable diseases to lifestyle-related diseases. To address this growing national health concern, comprehensive public health policies are needed, encouraging people to adopt more active and less sedentary lifestyles. Encouraging physical activity to prevent and mitigate the burden of NCDs will require holistic, multisectoral efforts delivered across all societal levels.

Twitter Monu Tamang @monutamang

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ORCID iD

Monu Tamang <http://orcid.org/0000-0003-1198-5856>

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